Physics majors can select from two curricular options: BA in Physics, which gives students the flexibility to combine physics with another focus area in an interdisciplinary program, in particular Physics Education, Nanoscale Science and Technology, Biophysics, Information Technology/Data Science, Technical Writing; and BS in Physics, which is intended to prepare students for the study of physics or a closely related subject in graduate school. In consultation with their academic advisors, students can choose between Option I and II by the end of the sophomore year.

Admission Requirements
- None
- Degree Requirements
  - Students who change degree programs and select this major must adopt the most current catalog.
  - Grades below “C” (2.0) in any required physics or mathematics courses are not acceptable; they must be repeated with a higher grade.
  - Departmental Residency Requirement consists of at least 15 semester hours of regularly scheduled 3000-4000 level courses taken from the UCF Department of Physics.
  - Physics majors are discouraged from taking courses as a transient student at a Florida College System institution, except in situations where one semester of a two semester sequence has already been taken at the Florida College System institution.
  - All prerequisites of courses taught within the College of Sciences will be enforced.
  - Courses designated in 2 (Common Program Prerequisites) are usually completed in the first sixty hours.
  - AA transfer students are expected to have completed the following courses before enrolling as Physics major.
  - These classes are prerequisites for advanced science classes and students entering without these classes will be unable to register for most of the advanced courses.
    - CHM 2045C Chemistry Fundamentals I 4 hrs
    - CHM 2046 Chemistry Fundamentals II 3 hrs
    - CHM 2046L Chemistry Fundamentals Laboratory 1 hr
    - MAC 2311C Calculus with Analytic Geometry I 4 hrs
    - MAC 2312 Calculus with Analytic Geometry II 4 hrs
    - PHY 2048C Physics for Engineers & Scientists I 4 hrs
    - PHY 2049C Physics for Engineers & Scientists II 4 hrs

1 With Department permission this course can be substituted by PHY 2053C.
2 With Departmental permission, this course can be substituted by PHY 2054C.

1. UCF General Education Program (GEP) (39 hrs)
- Note: Certain courses must be selected in the GEP for this major which brings the GEP hours above 36.

A: Communication Foundations (9 hrs)
- Prefer SPC 1063C Fundamentals of Technical Presentations 3 hrs
- Required ENC 1101 Composition I and 3 hrs
- Required ENC 1102 Composition II 3 hrs

B: Cultural & Historical Foundations (9 hrs)
- Prefer PHI 2010 Introduction to Philosophy 3 hrs
- Prefer HUM 2210 Humanistic Tradition I 3 hrs
- Prefer HUM 2230 Humanistic Tradition II 3 hrs

C: Mathematical Foundations (7 hrs)
- Required MAC 2311C Calculus with Analytic Geometry I 4 hrs
- Suggested STA 2023 Statistical Methods I 3 hrs

D: Social Foundations (6 hrs)
- Prefer ECO 2023 Principles of Microeconomics 3 hrs
- Prefer PSY 2012 General Psychology 3 hrs

E: Science Foundations (8 hrs)
- Required PHY 2048C Physics for Engineers & Scientists I 4 hrs
- BSC 2010C Biology I 4 hrs

2. Common Program Prerequisites (CPP) (20 hrs)
- MAC 2311C Calculus with Analytic Geometry I GEP
- MAC 2312 Calculus with Analytic Geometry II 4 hrs
- MAC 2313 Calculus with Analytic Geometry III 4 hrs

Select one of the following sequences of courses:
- CHM 2045C Chemistry Fundamentals I 4 hrs
- CHM 2046 Chemistry Fundamentals II and 3 hrs
- CHM 2046L Chemistry Fundamentals Laboratory 1 hr
- PHY 2048C Physics for Engineers & Scientists I GEP
- PHY 2049C Physics for Engineers & Scientists II 4 hrs

Take all of the following:
- CHM 2046 Chemistry Fundamentals II 3 hrs
- CHM 2046L Chemistry Fundamentals Laboratory 1 hr
- PHY 2048C Physics for Engineers & Scientists I GEP
- PHY 2049C Physics for Engineers & Scientists II 4 hrs

3. Core Requirements: Basic Level (24 hrs)
- In addition to those courses specified in the Common Program Prerequisites, students also must complete the following:
  - Core: Required, satisfies the CPP
    - CHM 2045C Chemistry Fundamentals I CPP
    - CHM 2046 Chemistry Fundamentals IA and CPP
    - CHM 2041 Chemistry Fundamentals IB CPP

- and
  - MAC 2311C Calculus with Analytic Geometry I GEP/CPP
  - MAC 2312 Calculus with Analytic Geometry II CPP
  - MAC 2313 Calculus with Analytic Geometry III CPP
- 1 PHY 2048C Physics for Engineers & Scientists I CPP
- 2 PHY 2049C Physics for Engineers & Scientists II CPP

1 With Department permission this course can be substituted by PHY 2053C.
2 With Department permission this course can be substituted by PHY 2054C.

Core: Additional requirements
- PHY 3101 Physics for Engineers and Scientists III 3 hrs
- PHY 3220 Mechanics I 3 hrs
- PHY 3513 Thermal and Statistical Physics 3 hrs
- PHY 3323 Electricity and Magnetism I 3 hrs
- PHY 4604 Wave Mechanics I 3 hrs
- PHZ 3113 Introduction to Theoretical Methods of Physics 3 hrs
- MAP 2302 Ordinary Differential Equations I 3 hrs

Laboratory Requirements
- PHY 3820L Intermediate Physics Laboratory 3 hrs

4. Core Requirements: Advanced Level
- Select one specialization

4.1 Education
- Students in this specialization must declare and be admitted to the Science Education Minor.
  - Required: 19 hrs
    - PHY 4012 Teaching Introductory Physics 3 hrs
    - EDG 4410 Teaching Strategies and Classroom Management 3 hrs
    - EDF 4467 Learning Theory and Assessment 3 hrs
    - TSL 4080 Theory and Practice of Teaching ESOL Students in Schools 3 hrs
    - SCE 4360 Science Instructional Analysis 4 hrs
    - SCE 4361 Programs in Teaching Science 3 hrs

Restricted electives: 9 hrs
- Select 9 credits from upper division PHY, PHZ, or AST courses or approved education courses to fulfill a double major or a minor in Science Education - Physics.
- The courses will be selected with adviser approval.
4.2 Nanoscale Science and Technology

Required: 12 hrs
- PHZ 3462 Nanoscience I: The Science and Societal Impacts 3 hrs
- PHZ 3464 Nanoscience II: Technological Applications 3 hrs
- PHZ 3466 Nanoscience III: A Virtual Laboratory 3 hrs
- EMA 3691 Nanomaterials Process Engineering 3 hrs

Restricted electives: 9 hrs
- Select from upper division physics, mathematics, chemistry, computer science or engineering courses.

Directed electives: 15 hrs
- The elective courses will be selected with advisor approval.
- PHY 3722C Physics-Laboratory-Electronics 3 hrs
- PHY 3752C Physics of Scientific Instruments 3 hrs
- EMA 3014 Nanomaterials Characterization and Applications 3 hrs

PHZ 3151 Computer Methods in Physics 3 hrs
BSC 3424 Nanobiotechnology 3 hrs
DSE 3490 Nanophotonics 3 hrs
PHY 5933 Selected topics in biophysics of macromolecules 3 hrs
PHI 4690 Ethics in Nanoscience and Nanotechnology 3 hrs
PHZ 5425C Electron Solid Interactions 3 hrs
PHZ 5445 Nanofabrication using Focused Ion Beam 3 hrs
PHY 5704 Physics of Nanoelectronics Devices 3 hrs

4.3 Biophysics

Required: 18 hrs
- BSC 2011C Biology II 4 hrs
- CHM 2210 Organic Chemistry I 3 hrs
- CHM 2211 Organic Chemistry II 3 hrs
- CHM 2211L Organic Laboratory Techniques I 2 hrs
- MCB 1310 Introduction to Biotechnology and Genetic Engineering 3 hrs
- BSC 3424 Nanobiotechnology 3 hrs

Restricted electives: 9 hrs
- Select 9 credits from upper division PHY, PHZ, or AST courses.
- The elective courses will be selected with advisor approval.

Directed electives: 9 hrs
- Select 9 credits from upper division biology or chemistry
- The elective courses will be selected with advisor approval.

Pre-meds are advised to take:
- PCB 3063 Genetics 3 hrs
- PCB 3063L Genetics Laboratory 1 hr
- PCB 3703C Human Physiology 4 hrs
- BCH 4053 Biochemistry I 3 hrs
- BCH 4054 Biochemistry II 3 hrs

4.4 Information Technology / Data Science

Required: 18 hrs
- COP 3223C Introduction to Programming with C 3 hrs
- COP 3502C Computer Science I 3 hrs
- COP 3330 Object Oriented Programming 3 hrs
- COP 4710 Database Systems 3 hrs
- CIS 3362 Cryptography and Information Security 3 hrs

Select 1:
- COT 3100C Introduction to Discrete Structures or 3 hrs
- MAD 2104 Foundations of Discrete Math 3 hrs

Restricted electives: 9 hrs
- Select 9 credits from upper division PHY, PHZ, or AST courses.
- The elective courses will be selected with advisor approval.

Directed electives: 6 hrs
- Select 6 credits from the following, or other approved upper division computer science, mathematics or engineering:
  - The elective courses will be selected with advisor approval.
  - CDA 3103C Computer Logic and Organization 3 hrs
  - COP 3402 Systems Software 3 hrs
  - COP 4516C Problem Solving Techniques and Team Dynamics 3 hrs

4.5 Technical Writing

Required: 15 hrs
- ENC 3455 Writing about Science and Technology 3 hrs
- LIT 4433 Literature of Science and Technology 3 hrs
- ENC 3314 Writing in the University 3 hrs
- ENC 3250 Professional Writing 3 hrs
- ENC 3351 Writing for Publication 3 hrs
- ENC 4262 International Technical Communication 3 hrs

Restricted electives: 9 hrs
- Select 9 credits from upper division PHY, PHZ, or AST courses.
- The elective courses will be selected with advisor approval.

Directed electives: 6 hrs
- Select 6 credits from upper division writing or communication courses:
- The elective courses will be selected with advisor approval.

- ENC 3455 Writing about Science and Technology 3 hrs
- LIT 4433 Literature of Science and Technology 3 hrs
- ENC 3314 Writing in the University 3 hrs
- ENC 3250 Professional Writing 3 hrs
- ENC 3351 Writing for Publication 3 hrs
- ENC 4262 International Technical Communication 3 hrs

5. Restricted Electives
- None

6. Capstone Requirements
- None

7. Foreign Language Requirements

Admissions
- Met by graduation requirement

Graduation
- Proficiency equivalent to one year of college instruction in a foreign language taught by the Department of Modern Languages and Literatures or Judaic Studies. Standardized examinations for foreign languages may be used to meet the requirement.

8. Electives
- None

9. Additional Requirements
- None

10. Required Minors
- None

11. Departmental Exit Requirements
- Students must have at least a 2.0 GPA in all courses counted toward the major.
- Students will be required to take a nationally normed test in Physics during their last year.
- Students will have an exit interview in their last semester with a representative of the Physics Undergraduate Committee.

12. University Minimum Exit Requirements
- A 2.0 UCF GPA
- 60 semester hours earned after CLEP awarded
- 48 semester hours of upper division credit completed
- 30 of the last 39 hours of course work must be completed in residency at UCF.
- A maximum of 45 hours of extension, correspondence, CLEP, Credit by Exam, and Armed Forces credits permitted.
- Complete the General Education Program, the Gordon Rule, and nine hours of Summer credit.

Total Semester Hours Required: 120

Honors In Major
- None
## UCF Degree Programs

### Related Programs
- None

### Certificates
- None

### Related Minors
- None

### Advising Notes
- None

### Transfer Notes
- Lower division courses do not substitute for upper division courses.
- Courses transferred from private and out-of-state schools must be evaluated for equivalency credit. The student must provide all supporting information.

### Acceptable Substitutes for Transfer Courses
- The following substitutions for common program prerequisites are acceptable if taken prior to transferring to UCF:
  - CHM 2045C: may use CHM 1040 plus CHM 1041 or CHM 2040C plus CHM 2041C

### Plan of Study
- This is one of numerous possible plans of study. See program description for all requirements. Consult a departmental advisor for alternate, new or more appropriate selections.
- Prior to enrolling in Chemistry, take Chemistry Placement Test ~ http://knightsource.sdes.ucf.edu/placement
- Prior to enrolling in Math, take Math Placement Test ~ http://utc.sdes.ucf.edu/math
- Although all classes are listed during the academic year, you may be required to complete 9 hours of them during the Summer. Consult with an advisor to determine if you are exempt.

### Freshman Year - Fall
- **15 hrs**
  - MAC 2311C: Calculus with Analytic Geometry I 4 hrs
  - CHM 2045C: Chemistry Fundamentals I 4 hrs
  - GEP 4 hrs
  - GEP 3 hrs

### Freshman Year - Spring
- **15 hrs**
  - PHY 2048C: Physics for Engineers & Scientists I 4 hrs
  - MAC 2312: Calculus with Analytic Geometry II 4 hrs
  - CHM 2046: Chemistry Fundamentals II 3 hrs
  - CHM 2046L: Chemistry Fundamentals Laboratory 1 hr
  - Note: Lab may be taken later if seats are not available.
  - GEP 3 hrs

### Sophomore Year - Fall
- **17 hrs**
  - PHY 2049C: Physics for Engineers and Scientists II 4 hrs
  - MAC 2313: Calculus with Analytic Geometry III 4 hrs
  - GEP 3 hrs
  - GEP 3 hrs
  - GEP 3 hrs

### Sophomore Year - Spring
- **15 hrs**
  - PHY 3101: Physics for Engineers and Scientists III 3 hrs
  - PHZ 3113: Introduction to Theoretical Methods of Physics 3 hrs
  - MAP 2302: Ordinary Differential Equations I 3 hrs
  - GEP 3 hrs
  - GEP 3 hrs

### Junior Year - Fall
- **15 hrs**
  - PHY 3802L: Intermediate Physics Laboratory 3 hrs
  - PHY 3323: Electricity and Magnetism I 3 hrs
  - PHY 3513: Thermal and Statistical Physics 3 hrs
  - Directed Elective 3 hrs
  - Free Elective 3 hrs

### Junior Year - Spring
- **15 hrs**
  - PHY 3220: Mechanics I 3 hrs
  - Restricted Elective 3 hrs
  - Directed Elective 3 hrs
  - Directed Elective 3 hrs
  - GEP 3 hrs

### Program Academic Learning Compacts
- Program Academic Learning Compacts (student learning outcomes) for undergraduate programs are located at: http://www.o eas.ucf.edu/academiclearningcompacts.html